PLANT DESIGN CRITERIA

WASTEWATER CHARACTERISTICS

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PARAMETER INFLUENT **EFFLUENT** 0.3 AVERAGE DAILY FLOW (MGD) 0.3 PEAK DAILY FLOW (MGD) 0.653 BOD_x(MG/L) 200 30 (PER PERMIT) 127 TOTAL SUSPENDED SOLIDS (MG/L) 30 (PER PERMIT) 40 TOTAL NITROGEN (MG/L) 4 (PER PERMIT, ANNUAL AVERAGE) TOTAL PHOSPHORUS (MG/L) 0.3 (PER PERMIT, ANNUAL AVERAGE)

PRE-EQUALIZATION

QUANTITY

AMMONIA NITROGEN (MG/L)

EXISTING LAGOON TYPE

40,000 EFFECTIVE VOLUME (GAL)

GRIT & SCREEN

HYDRAULIC PEAK FLOW (MGD)

SOLIDS CAPTURE RATE @ PEAK FLOW >=90% (SOLID SIZE >=0.25 MM)

AIR SUPPLY

6 SCFM @1.5 PSIG

OVERALL PARAMETER

2 QUANTITY 0.25 CAPACITY (MG)

0.35 (INCL. PLANT RECYCLE STREAM) **AVERAGE DAILY FLOW (MGD)** 0.70 (INCL. PLANT RECYCLE STREAM) PEAK DAILY FLOW (MGD)

1.17 HYDRAULIC FLOW (MGD) MINIMUM DESIGN TEMP. 12°C -18 °C MINIMUM DESIGN AMBIENT (AIR) TEMP. 544 BOD LOADING (LBS/DAY) 432 T88 LOADING (LB8/DAY) 114 TKN LOADING (LBS/DAY) 17 TP LOADING (LBS/DAY) 2,800 DESIGN MLSS (MG/L) HRT (HRS) 11.7 **AEROBIC SRT (DAYS)** 25.2 SYSTEM SRT (DAYS)

0.54 G VSS/G BOD /DAY **BIOSOLIDS YIELD FACTOR**

1.35 KG Q/KG BOD REMOVED **OXYGEN REQUIREMENTS**

4.6 KG Q,KG TKN OXIDIZED -2.86 KG Q/KG NQ -N REDUCED

SBR BLOWERS

LOCATION **BLOWER ROOM** QUANTITY 3 (1 STANDBY) AIR FLOW PER BLOWER (SCFM) 480 @ 10 PSI HORSEPOWER (HP)

WAS PUMPS

9.8 (PER PERMIT, MONTHLY AVERAGE)

LOCATION

QUANTITY

SUBMERSIBLE NON-CLOG

DISCHARGE SIZE (INCH)

DESIGN CAPACITY (GPM) 100 @ NORMAL OPERATING DISCHARGE HEAD - TDH (FT) 12 @ NORMAL OPERATING

26 @ DRAINING

SUBMERSIBLE MIXER

HORSEPOWER (HP)

FLOATING MIXERS

LOCATION SBR TANKS QUANTITY HORSEPOWER (HP)

POST-EQUALIZATION TANK

OVERALL PARAMETER

EFFECTIVE CAPACITY (GAL) 63,966

MIXING

POST-EQUALIZATION MIXER

LOCATION **POST-EQUALIZATION TANK**

QUANTITY

TYPE

HORSEPOWER (HP)

EFFLUENT FILTER

QUANTITY (NUMBER OF CELLS) FILTRATION AREA (SQ.FT/CELL)

HYDRAULIC LOADING RATE (GPM/FT) 3.24 @ PEAK DAILY FLOW

TOTAL REJECT FLOW (GPM/CELL) 7-14 7.8 TOTAL AIR CONSUMPTION (SCFM)

UV DISINFECTION CHANNEL

QUANTITY (NUMBER OF UV BANKS)

0.703 (INCL. PLANT RECYCLE STREAM) DESIGN FLOW (MGD)

4.13 RETENTION TIME (SEC) 56,251 UV DOSE (WATT-SEC/SQ. CM) 65% @ 253.7 NM ULTRAVIOLET TRANSMITTANCE

AEROBIC DIGESTERS

OVERALL PARAMETER

TOTAL WAS SOLIDS (LBS/DAY) 542 (INCL. CHEMICAL SLUDGE)

40% **VSS REDUCTION** SRT (DAYS) 12**°**C MINIMUM DESIGN TEMPERATURE 0.06 SLUDGE DECAY RATE (1/DAY) AIR REQUIREMENTS (SCFM/1000 CF) 20

DIGESTER BLOWERS

LOCATION **BLOWER ROOM** QUANTITY 3 (1 STANDBY) AIR FLOW PER BLOWER (SCFM) 183 @ 10 PSI HORSEPOWER (HP)

DIGESTED SLUDGE PUMPS

LOCATION PIPE GALLERY

QUANTITY

TYPE PROGRESSIVE CAVITY

DISCHARGE SIZE (INCHES) DESIGN CAPACITY (GPM) 30 **DISCHARGE HEAD - TDH (FEET)** 7.5 (VFD) HORSEPOWER (HP)

SLUDGE PROCESSING EQUIPMENT

LOCATION **HEADWORKS BUILDING** QUANTITY

TOTAL DRY SOLIDS LOADING (LBS/DAY) FLOW TO DEWATERING PRESS (GPD)

POLYMER DOSAGE (LBS/TON OF SOLIDS) 17-22 (DRY WT BASIS) 8.7 (36% ACTIVE) **EMULSION (LBS/GAL)**

DEWATERING PRESS DRIVE HORSEPOWER (HP) 5 FLOCCULATOR HORSEPOWER (HP)

CHEMICAL FEED PUMPS

METHANOL METERING PUMPS

QUANTITY 2 (INCL. 1 STANDBY) CAPACITY (GPH)

MAXIMUM PRESSURE (PSIG)

FERRIC CHLORIDE METERING PUMPS

SBR & AEROBIC DIGESTER

QUANTITY 1 TO SBR TANKS

1 TO AEROBIC DIGESTERS

1 STANDBY

CAPACITY (GPH) 30 MAXIMUM PRESSURE (PSIG)

<u>FILTER</u> QUANTITY 2 (1 STANDBY) 0.75

CAPACITY (GPH) MAXIMUM PRESSURE (PSIG)



KCI 🚉

TOWN OF WARSAW WASTEWATER TREATMENT PLANT **ENR IMPROVEMENTS**

THE TOWN OF WARSAW, VA. P.O. BOX 780

DESIGN CRITERIA

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